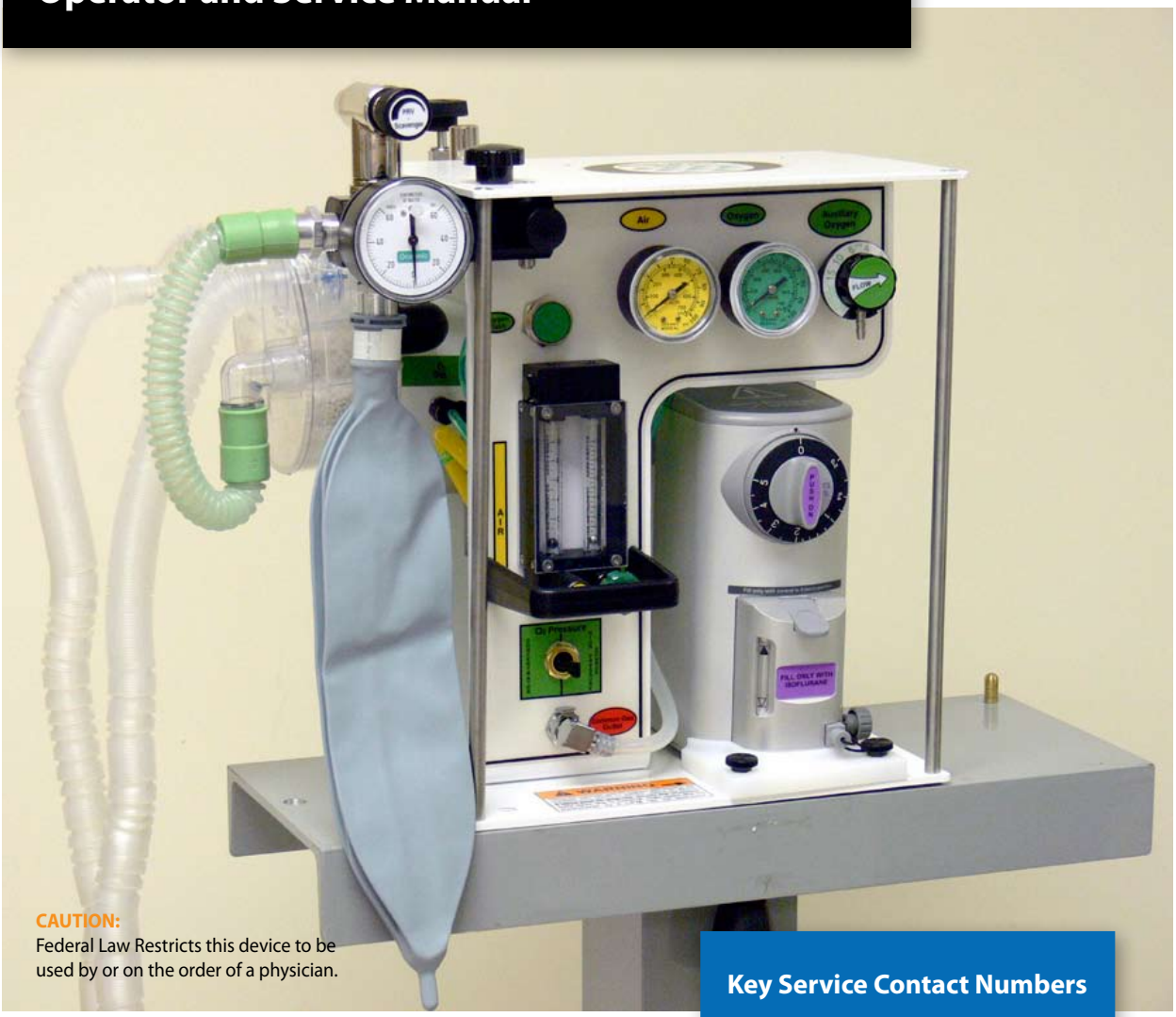
Magellan 2200, Model-3 Anesthesia Machine
Operator and Service Manual



CAUTION:
Federal Law Restricts this device to be used by or on the order of a physician.

Key Service Contact Numbers

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02.17.08

Magellan 2200 Model-3 Anesthesia Machine
Operator and Service Manual

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GENERAL DESCRIPTION

The Magellan-2200, Model-3 Anesthesia Machine is compact, robust and flexible, easy to transport and is a simplified version of the Magellan-2200, Model-1 Anesthesia Machine that was originally designed for the military. The Magellan-2200, Model-3 is designed to be used when a mechanical ventilator is not needed and may be used by mobile surgical teams, surgical specialty hospitals, office-based anesthesia , hospitals, specialty clinics of all descriptions and veterinary medicine.

The Magellan-2200, Model-3 may be mounted on its custom-made carrying case, a mobile trolley or cart as well as on a tabletop as the operator prefers.

FACTORY QUALITY ASSURANCE TESTING

Each Magellan-2200, Model-3 is tested several times during the manufacturing process. Final testing and calibration of components and the completed machine are recorded and a final functional test certificate is included in the shipment from the factory.

DEFINITION OF STATEMENTS

The following terminology and statements are important for the operator to understand before proceeding with the manual or operation of the Magellan-2200, Model-3:

WARNINGS: Indicate a possibility of injury to the operator or others.

CAUTIONS: Indicate a possibility of damage to the equipment.

NOTES: Indicate points of interest for proper operation of the equipment.

SPECIFICATIONS

Dimensions:	
Height	14.5-inches
Width	12-inches
Depth	8-inches
Weight:	
Free Standing	29 lbs. fully equipped
Shipping Weight	40 lbs
Machine Materials:	aluminum, brass and plastic
Carrying Case Materials:	Plastic, military grade
Operating Temperature Range:	35 degrees F to 110 degrees F
Recommended Gas Supply Sources:	
O_2 Main and Cylinders	35 psi to 70 psi (50 psi is optimal)
O_2 Concentrators	3-10 psi 5 psi is optimal)
Air Main, Cylinders and/or Air Compressors	35 psi to 70 psi (50 psi is optimal)
Flowmeter Fresh Gas Flow	1 lpm to 20 lpm each flowmeter (20 lpm total)
Oxygen Flush Valve	Recessed, self-closing, push-button, color coded and labeled, provides 45-55 lpm constant flow while push-button is depressed
CO_2 Absorber	King Systems KAB-9 (re-fillable)
CO_2 Absorber Canister Capacity	400 grams soda lime
Directional Valves	Built in the CO_2 Absorber
CO_2 Absorber Mounting Bracket	Plastic, secured with knob to main frame of machine
Pressure Relief Valve and Waste-Gas Scavenging Scavenging Port	Attached to Bag/Gauge/PRV Arm
Common Gas Outlet	Quick-Connect, Size Indexed
Tubing Circuit	King SystemsF-360-61 or any standard anesthesia circle
Gas Pressure Hoses	DISS and Thread indexed, female connectors at both ends
Gas Inlet Manifold	DISS, Thread indexed male connectors with one way valves with separate filters and filter spacers

continued on next page ...

Gas Inlet Pressure Regulators:		
Main Supply Cylinder	DISS and Thread indexed for Oxygen and Air	
Safety back-up Cylinder	Pin-Indexed, Yoke-mounted for "D" and "E" cylinders	
Oxygen and Air Supply Gauges	0-3000 psi range, color-coded and clearly labeled	
Oxygen Supply Alarm	Pneumatically actuated when supply pressure falls below 35 psi (mains) 1 psi (concentrator)	
Alarm Power Source	9-volt battery located in body of alarm container	
Air and Oxygen Flowmeters	Calibrated and scaled 0-10 lpm, color-coded, O2 flowmeter has fluted knob for easy identification by touch	
Oxygen Analyzer/Monitor	Maxtec OM-25-ME (or equivalent) galvanic cell sensor, sensor-life expectancy of 2 years under normal conditions	
Oxygen Analyzer Power Source	2 each AA batteries, life expectancy approx 3000 use-hours	
Auxiliary O2 Flow Selector	Scaled 0-10 lpm in set increments, used for pre/post anesthesia oxygen administration with nasal cannula/mask	
Vaporizer	Penlon Sigma Delta series, bolt (cage) mounted	
Patient Pressure Gauge	Mounted on front side of Bag/PRV/Scavenger Arm, + 60 cmH2O to -60 cmH2O	
Waste Gas Scavenger	Positive and negative relief valves, 1 liter reservoir, may be used with or without constant vacuum (passive)	
Total Machine Gas Leakage	@30 cmH2O	-0- ml/min
	@80 cmH2O	-0- ml/min
Internal System Compliance	@20 cmH2O	1.1 ml/cmH2O
	@40 cmH2O	1.3 ml/cmH2O
Internal System Resistance	@1.0 L/sec gas flow	4.11 cmH2O
	@0.5 L/sec gas flow	1.80 cmH2O
APL Valve Pressure Drop	@3.0 l/min gas flow	0.12 cmH2O
	@30 l/min gas flow	1.03 cmH2O
Storage Temperature		
Indoors	+ 160 degrees F	
Outdoors	- 30 degrees F (Allow unit to warm to normal operating room temperature for at least one hour)	

FUNCTIONAL & OPERATIONAL PROCEDURES

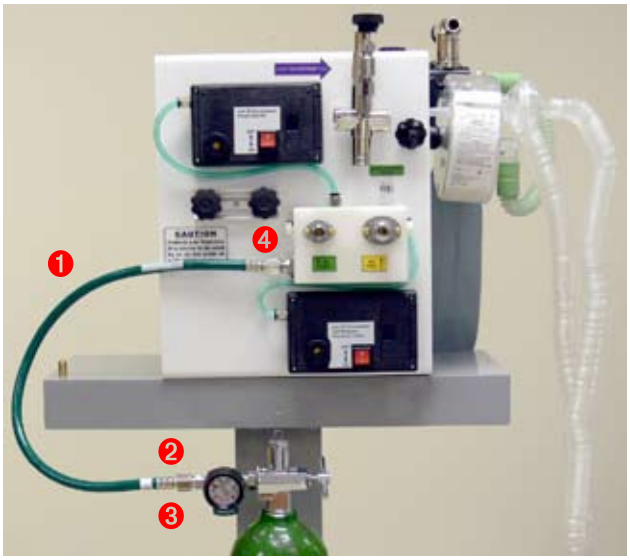
Assembly of Components

Back of Machine:

1.) Pressure Reducing Regulators/High Pressure Hoses

A. Emergency Back Up Oxygen:
Attach yoke-type regulator to the "D" or "E" cylinder to be used for safety back-up.

B. Oxygen Hose:
❶ Attach one end of the 24-inch green high pressure hose to the ❷ outlet port of the pressure reducing regulator and the ❸ opposite end to the ❹ left-side Oxygen Inlet Connector on the Gas Manifold.



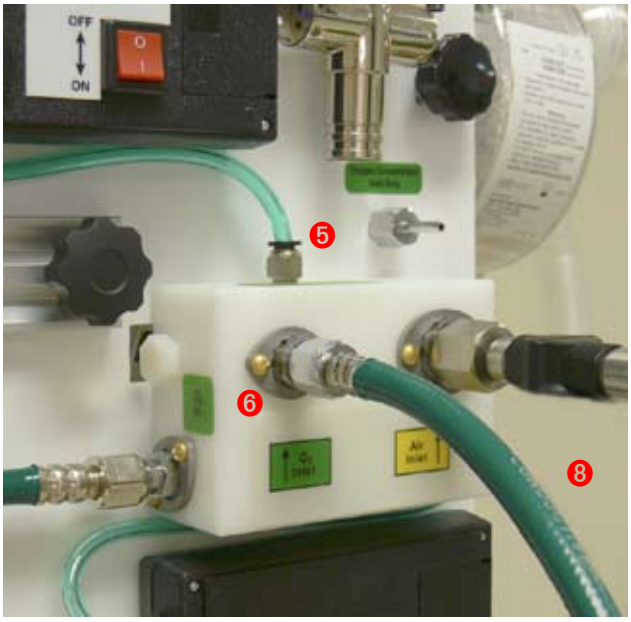
C. Oxygen Hose Main O2 Supply:
❽ Attach one end of the 15-foot green high pressure
❺ hose to the top left Oxygen Inlet Connector on the
❻ Gas Manifold and the opposite end to the outlet port of a pressure-reducing regulator attached to an Oxygen cylinder or Oxygen wall outlet. See lower right photo.

D. Oxygen Concentrator in Lieu of Main O2 Source:
If an O2 Concentrator is to be used instead of cylinder or wall O2 sources, the tubing from the Concentrator should be attached to the adapter that is labeled
❼ "Oxygen Concentrator Inlet Only."

E. Water Trap:
❽ Attach the Water Trap to the Air Inlet port on the Gas Manifold.

CAUTION: DO NOT attach the Water Trap to the outlet port of either an Air Wall Outlet or Medical Grade Air Compressor as water may condense en-route to the anesthesia machine in the high pressure tubing and cause possible malfunction of some of the components.

F. Air Hose:
Attach one end of the 15-foot yellow Air High-Pressure Hose to the inlet port of the Water Trap. Attach the opposite end of the hose to the air compressor outlet port or to the medical grade air sources (wall or cylinder).



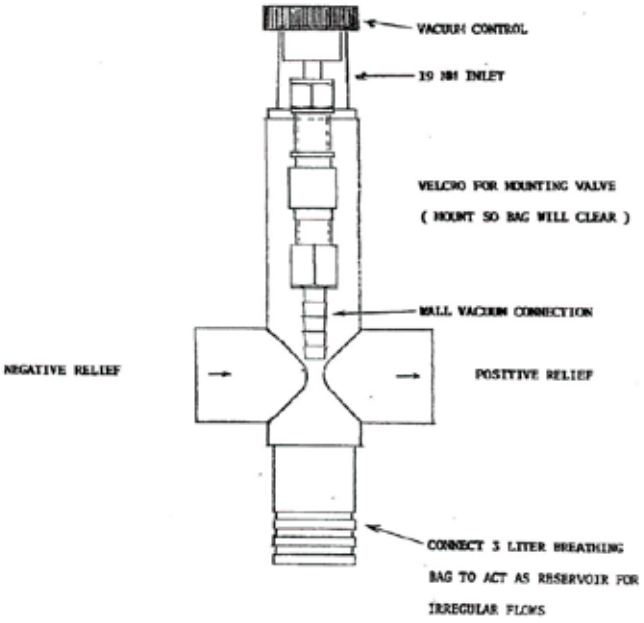
2.) Waste Gas Scavenger:

A. Attach the waste gas scavenger to the keyholes located to the right of the low pressure alarm box, then attach the reservoir bag to the bottom port of the scavenger.

B. Attach suction source tubing to the inlet port of the scavenger control knob port.

C. Attach blue scavenger tubing to the labeled outlet port of the PRV/Scavenger and the opposite end to the inlet port at the top of the scavenger.

VACUUM MANIFOLD



Left Side of Machine

1.) Bag-PRV/Scavenger Arm

As this component is already attached to the support pole, loosen the holding knob and swing the Arm so that the Pressure Gauge is facing the operator as shown below; tighten the holding knob.

2.) CO_2 Absorber Support Arm

Attach the CO_2 Absorber Support Arm to the main body of the machine by inserting the two guide pins of the arm into the two holes provided, then, insert the knob screw from the back side of the main body and tighten securely.

Attach the CO_2 Absorber to the Support Arm and ensure that the Common Gas Outlet Tubing is attached to the CO_2 Absorber as shown in the photo below:

3.) Tubing, CO_2 Absorber to Bag-PRV/Scavenger Arm
Attach the Green, color-coded 22mm tubing to the bottom-right outlet port of the CO_2 Absorber and the opposing end to the inlet port (located on the bottom of the arm) of the Bag-PRV/Scavenger Arm, as shown in the photo below.

Right Side of Machine
Vaporizer Mounting/Replacing
In the event that the vaporizer needs to be installed or removed, the following method should be utilized:

A. Installation:
1. Insert the back side of the vaporizer into the cavity; attach the size-coded inlet connector to the left-side inlet port of the vaporizer.

2. Insert the two threaded stems into the two holes provided, then mount the metal spacer onto the two threaded stems on the Back side of the frame and secure it in place with the two threaded knobs.

3. Attach the second size-coded connector to the outlet port of the vaporizer.

4. If desired for transport or other reasons, place the white plastic keeper under the bottom front of the vaporizer and secure by using the two threaded stem knobs into the two holes provided.

- **A.** Mount analyzer bracket
- **B.** Install analyzer
- **C.** Install O_2 sensor on inhalation side of CO_2 absorber

PRE-USE CHECKLIST

Emergency Ventilation Equipment

1. Verify Backup Ventilation Equipment is Available and Functioning

High Pressure System

2. Check Oxygen Cylinder Supply
   A. Open O2 cylinder and verify at least half full (approx. 1000 psi)
   B. Close cylinder

3. Check Central Pipeline Supplies
   A. Check that hoses are connected and pipline gauges read approx. 50 psi.

Low Pressure System

4. Check Initial Status of Low Pressure System
   A. Close flow control valves and turn vaporizer off.
   B. Check fill level and tighten vaporizer filler cap.

5. Perform Leak Check of Machine Low Pressure System
   A. Verify that the machine flow control valves are OFF.
   B. Attach "Suction Bulb" to Common Fresh Gas Outlet.
   C. Squeeze bulb repeatedly until fully collapsed.
   D. Verify bulb stays full collapsed for at least 5 seconds.
   E. Open vaporizer and repeat "c" and "d" above.
   F. Remove suction bulb and reconnect fresh gas hose.

6. Test Flowmeters
   A. Adjust flow of oxygen and air through their full range, checking for smooth operation of floats and undamaged flowtubes.

Scavenging System

7. Adjust and Check Scavenging System
   A. Ensure proper connections between the scavenging system and APL (pop-off) valve
   B. Adjust wasted gas vacuum (if needed).
   C. Fully open APL valve and occlude Y-piece.
   D. With minimum O2 flow, allow scavenger reservoir to collapse completely and verify that system pressure gauge reades approx. zero.
   E. With the O_2 flush activated, allow the scavenger reservoir bag to distend fully and then verify that system pressure gauge reads below 10 CmH_2O.

Breathing System

8. Calibrate Oxygen Monitor
   A. Ensure monitor reads 21% in room air.
   B. Verify low oxygen alarm is enabled and functioning.
   C. Reinstall sensor in circuit and flush breathing system with oxygen.
   D. Verify that monitor now reads greater than 90%.

9. Check Initial Status of Breathing System
   A. Check that breathing circuit is complete, undamaged and unobstructed.
   B. Check reservoir bag is properly attached and undamaged.
   C. Verify that CO_2 absorbent is adequate.
   D. Install breathing circuit accessory equipment (e.g. humidifier) to be used during the case.

10. Perform Leak Check of the Breathing System
   A. Set all gas flows to zero or (minimum).
   B. Close APL (pop-off) valve and occlude Y-piece.
   C. Pressure breathing system to about 30 CmH_2O with O_2 flush.
   D. Ensure that pressure remains fixed for at least 10 seconds.
   E. Open APL (pop-off) valve and ensure that pres sure decreases.
   F. Close APL (pop-off) valve , attach an artificial lung to the Y-piece and partially fill the reservoir bag, then manually compress the reservoir bag and ensure that the one way valves and assure inflation and deflation of artificial lung and appropriate feel of system resistance and compliance.
   G. Remove the artificial lung from the Y-piece.

Monitors

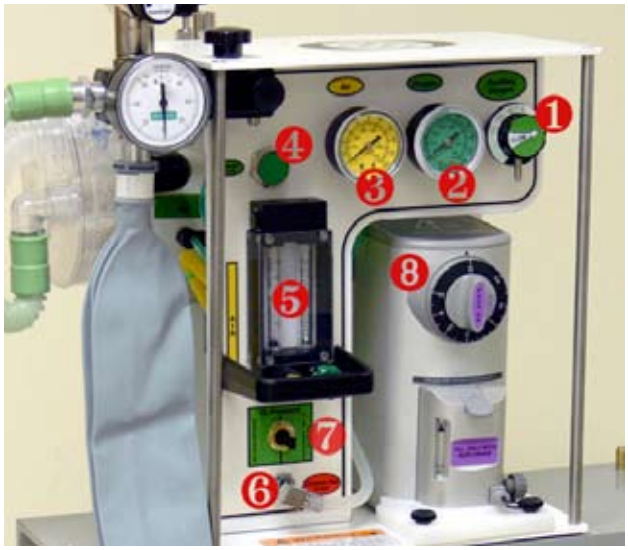
11. Check, Calibrate and/or Set Alarm Limits of all Monitors
   A. Oxygen Monitor
   B. Physiologic Monitor

Final Position

12. Check Final Status of Machine
   A. Vaporizer off.
   B. APL valve open.
   C. All flowmeters to zero.
   D. Patient suction level adequate.
   E. Breathing system ready to use.

FUNCTIONAL OPERATION OF CONTROLS AND ACCESSORIES

With the Pre-Use Checklist completed, the Magellan Model-3 is ready to use. It is imperative that the operator understands how to utilize the controls of the machine properly and the following information will be helpful:



Gas Source Attachment

1. Attach the primary O_2 source gas high pressure hose to either of the O_2 DISS inlet adapters.
2. If the operator desires to use an Oxygen Concentrator as an O_2 source, attach the tubing from the concentrator to either the qadapter labeled "O_2 Concentrater".

NOTE: When using an O_2 concentrator as the primary O_2 source, the maximum O_2 concentration may not rise above 95%. Adjust the O_2 Monitor low O_2 % alarm accordingly.

1. Auxiliary O_2 Flow Selector: Designed to allow the operator to supply oxygen to a patient pre and post-op, with masks or cannula's featuring small bore tubing. The selector knob will provide oxygen flow at 2,4,6,10 and 15 liters per minute.

NOTE: When not in use, the selector control should be in the "O" position in order to not waste oxygen sources.

2. Oxygen Pressure Gauge: Indicates the source pressure of Oxygen for all Oxygen-related components of the system.
3. Air Pressure Gauge: Indicates the source pressure of Air for all Air-related components of the system.
4. Flush Button: Press the button inwards to activate 100% Oxygen through the system.

When activated, the oxygen gas flows for the flush button to the Common Gas Outlet and then directly to the Inspiratory side of the patient tubing circuit. One-way valves prevent the Oxygen Flush Gas from entering the vaporizer or being mixed with mixed gases from the flowmeters.

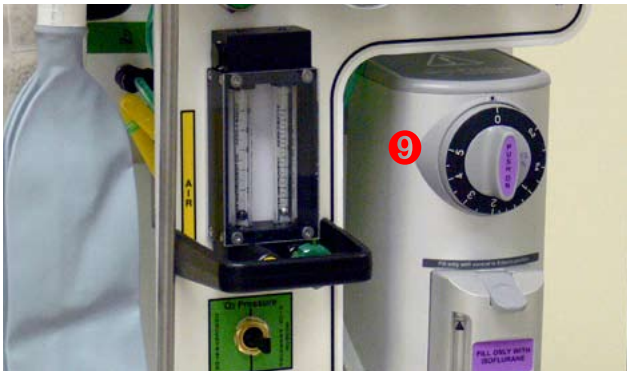
5. Flowmeters: The Oxygen and Air flowmeters are operated by turning the individual control knobs clock-wise for increased flow and counter-clockwise for decreased flow.

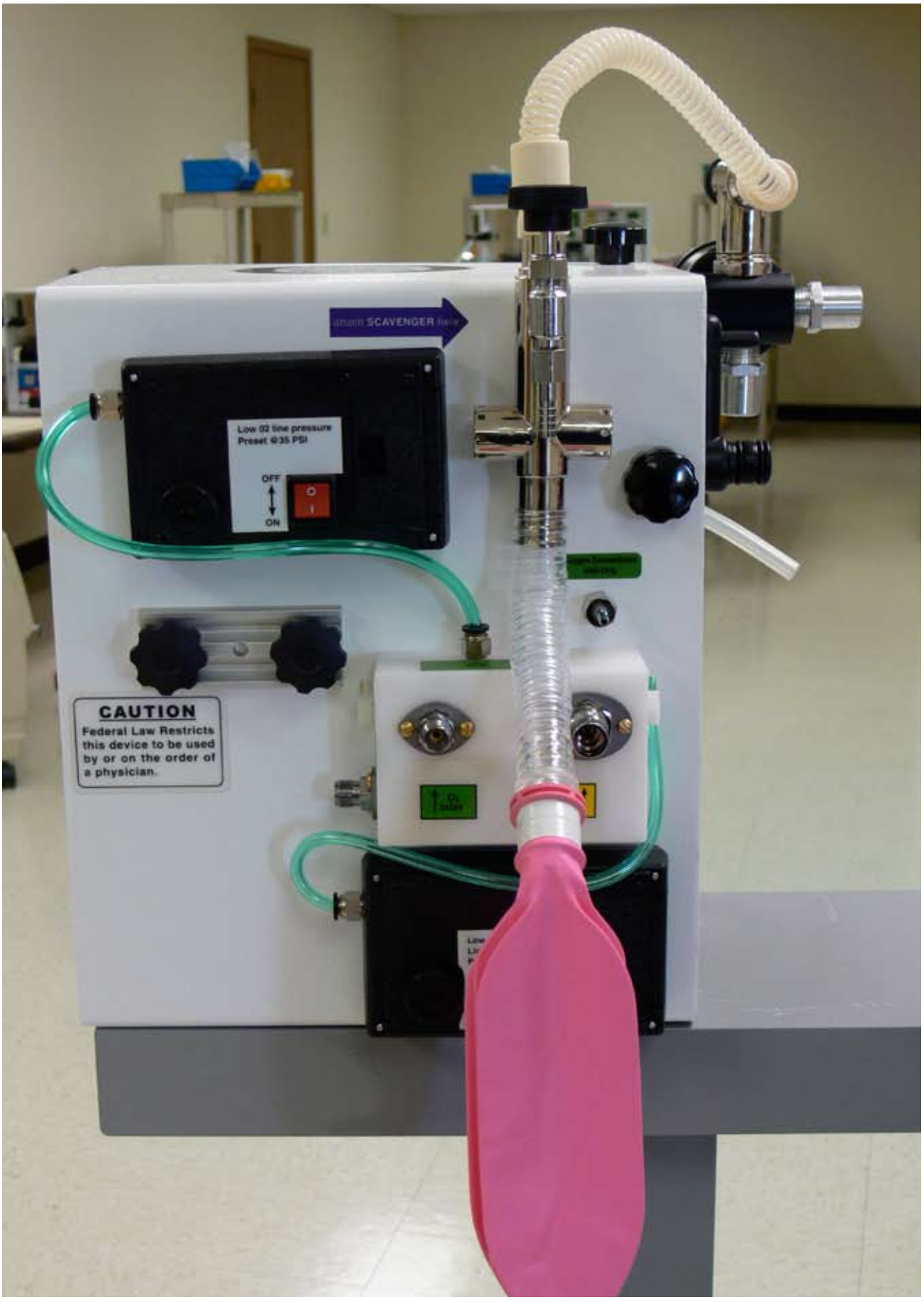
NOTE: Titration of FIO2 is managed by using both flowmeters and adjusting them until the desired FIO@ is observed on the Oxygen Monitor display screen.

6. Common Gas Outlet: Provides a channel for all low flow gas and vapor to flow to the inspiratory side of the CO_2 Absorber, the reservoir bag and then on to the patient and rest of the circle system.
7. O_2 power toggle selector for main O_2 or concentrator to power flowmeters.
8. Jackson-Reese/Mapelson-D Adapter: The adapter is placed into the Common Gas Outlet and the selected bag-gas system is attached.

9. Vaporizer: The Penlon Delta Sigma vaporizers are generally used with the Magellan anesthesia machines. Please refer to the Penlon vaporizer Operator's Manual for instructions on use – depending on whether the vaporizer is key-filled, pour-filled or Abbott adaptor-filled.

WARNING: Tilting the vaporizer past 45 degrees with liquid in the chamber can result in patient imjury or death.. IF tilted past 45 degree, empty the chamber, fully open the percent control, then open the Oxygen flowmeter to 5 lpm for 10 minutes. Operation may then resume normally.




SCAVENGER
Low 02 line pressure
Preset @35 PSI
OFF
ON
CAUTION
Federal Law Restricts this device to be used by or on the order of a physician.

Post-Use Checklist

1. Turn off all inlet gas pipeline and cylinder sources.
2. Turn off the vaporizer and completely empty the fluid chamber.
3. Remove all patient-contact tubing and fittings.
4. Turn off Air and/or Oxygen and physiologic monitors.
5. Turn off back-up Oxygen cylinder.

CLEANING AND DISINFECTION

The Magellan-2200, Model-3 may have the entire exterior of the device cleaned with a mild solution of soap and water and thoroughly dried off.

Disinfection of the outer contents of the entire device may be accomplished with a mild hospital-grade disinfectant solution, such as CaviCide. Follow manufacturer's directions.

Minor Maintenance Recommendations

NOTE: For all testing procedures, pre- and post-maintenance, utilize the Pre-Use Checklist (beginning on page 11 of this manual) to ensure that all components are properly working.

Semi-Annual Maintenance
Back side of unit:
Gas Manifold

1. Remove the holding screw for the two oxygen and one air retainers surrounding/securing the oxygen and air DISS inlet adapters.
2. Remove the round spacer units from the manifold.
3. Remove the cone-shaped filter from the manifold.
4. Replace the filter, followed by the spacer then screw in the DISS adapter.
5. Place the air and oxygen adapter retainers and tighten the screws.

Gas Hoses and Regulators

6. Inspect the two oxygen and one air high pressure hoses for wear and kinking.
7. Inspect the pin-indexed oxygen pressure reducing regulator, ensuring that the pins are straight.

Front Side of Unit

9. Inspect the vaporizer, unlock and rotate the agent concentration control selector, ensuring that it moves freely and locks into the closed position when closed.
10. Inspect vaporizer retainer, ensuring that the holding screws are securely in place.
11. Inspect the mounting adapters for the auxiliary oxygen selector, oxygen and air pressure gauges, flush button, flowmeters and gas pressure selector switch, ensuring holding nuts are tight.
12. Inspect the soda lime absorber and mounting bracket for undue wear.
13. Inspect the pressure gauge/scavenger/pressure relief valve assembly for undue wear.
14. Inspect the reservoir bag and replace if needed. Perform the Pre-Use Checklist and ensure that all components are working properly, post-maintenance.

PROBLEM SOLVING GUIDE

PROBLEM	SOLUTION
Low O2 Pressure Alarm Activates	Check main and alternate oxygen gas sources by observing the gas presure gauges. Resove by ensuring adequate gas supplies are available and attached to machine properly.
Soda lime in absorber turns blue	Replace soda lime in canister.
Reservoir bag does not inflate	Check entire tubing circuit for leaks.
Oxygen Sensor does not calibrate	Check O_2 supply and O_2 pressure gauge to ensure O_2 is available. Check O_2 sensor to ensure proper seating in "T" adapter.

CYLINDER GAS TABLE

Cylinder Gas Formula

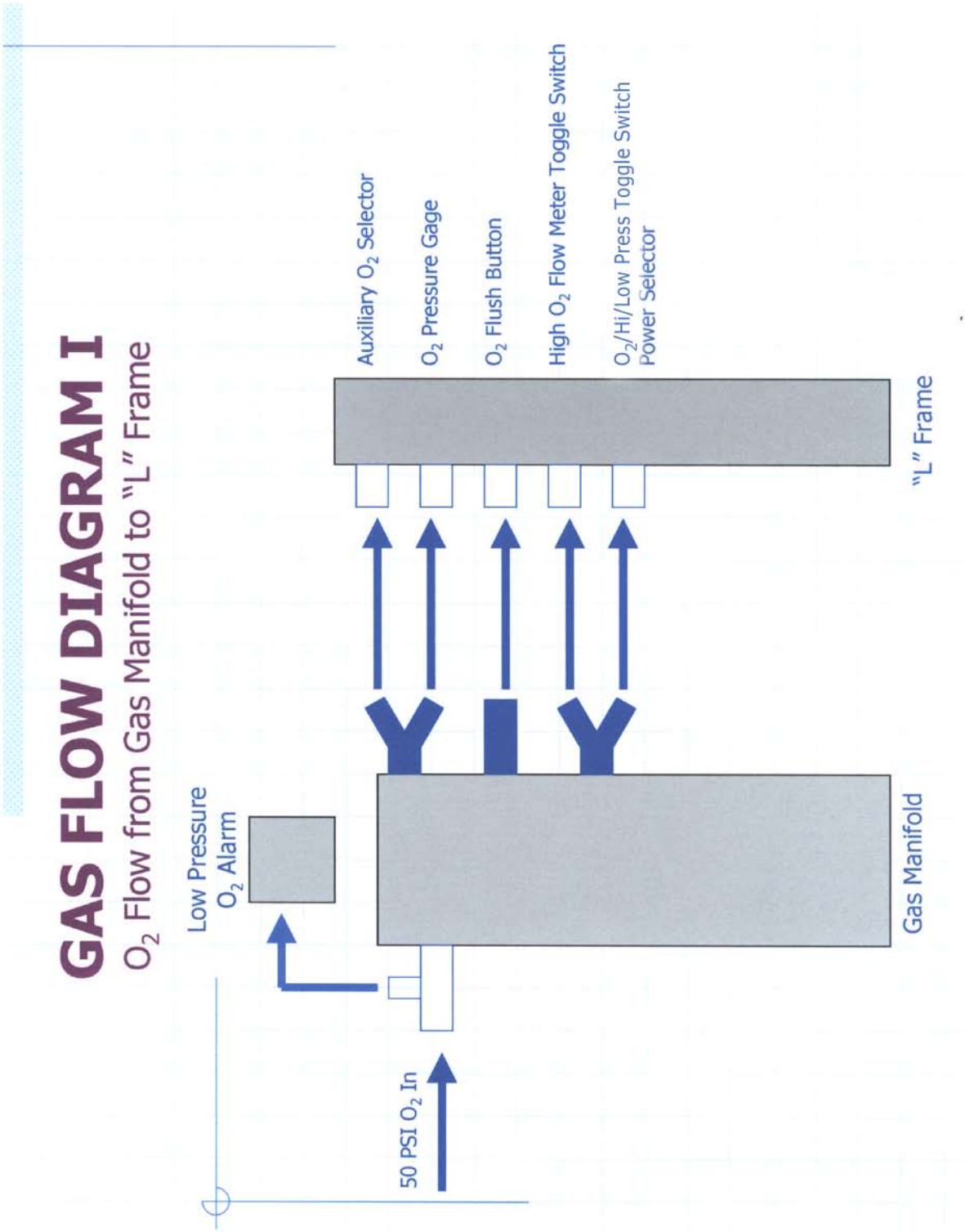
Gas Volume of Cylinders	**C**	**E**	**G**	**H**	**(Size)**
1. Pressure 2200 psi	**12.7**	**22**	**187**	**244**	
2. Factors, duration of flow Air/O_2	**0.6**	**0.28**	**2.41**	**3.14**	
3. Formula, duration of flow:	**Flow (minutes) = Cylinder press. x factor / liter flow**				

Example: **"E" Cylinder**

$$\frac{2200 \times 0.28}{8} = \frac{616}{8} = 77 \text{ minutes}$$

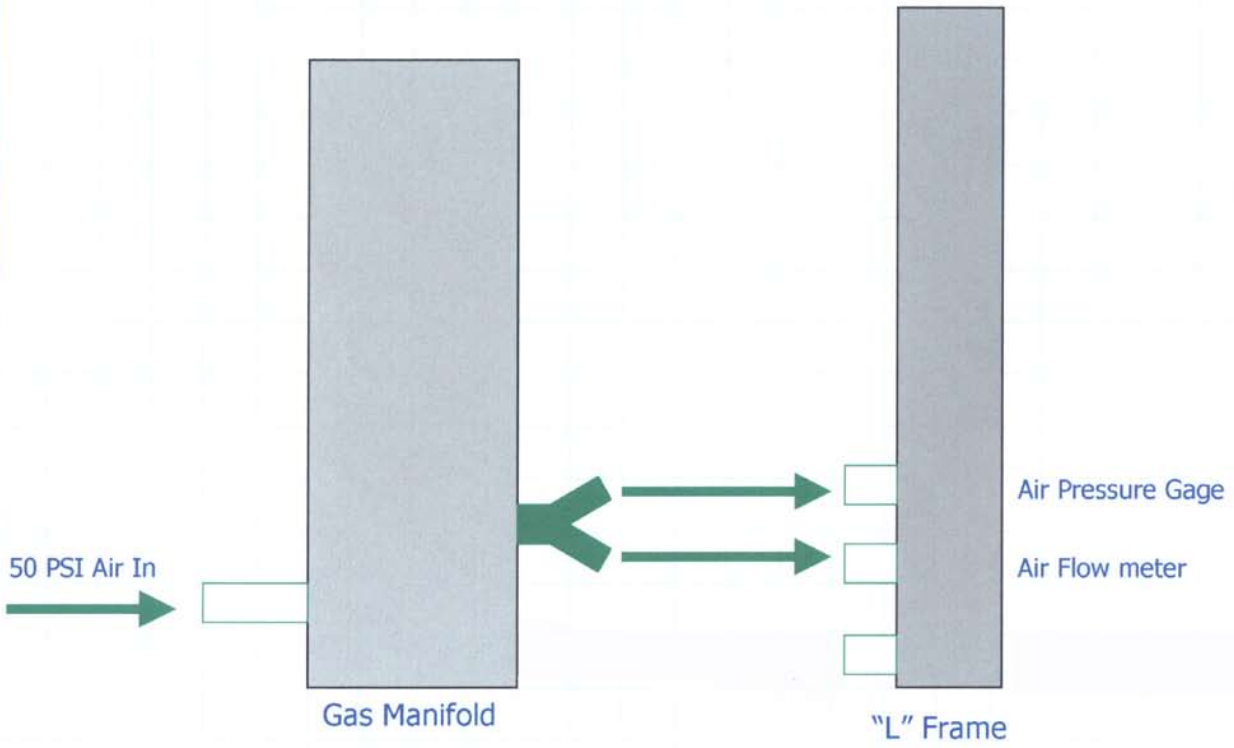
$$\frac{77}{60} = 1.28 \text{ Hours}$$

GAS FLOW DIAGRAMS



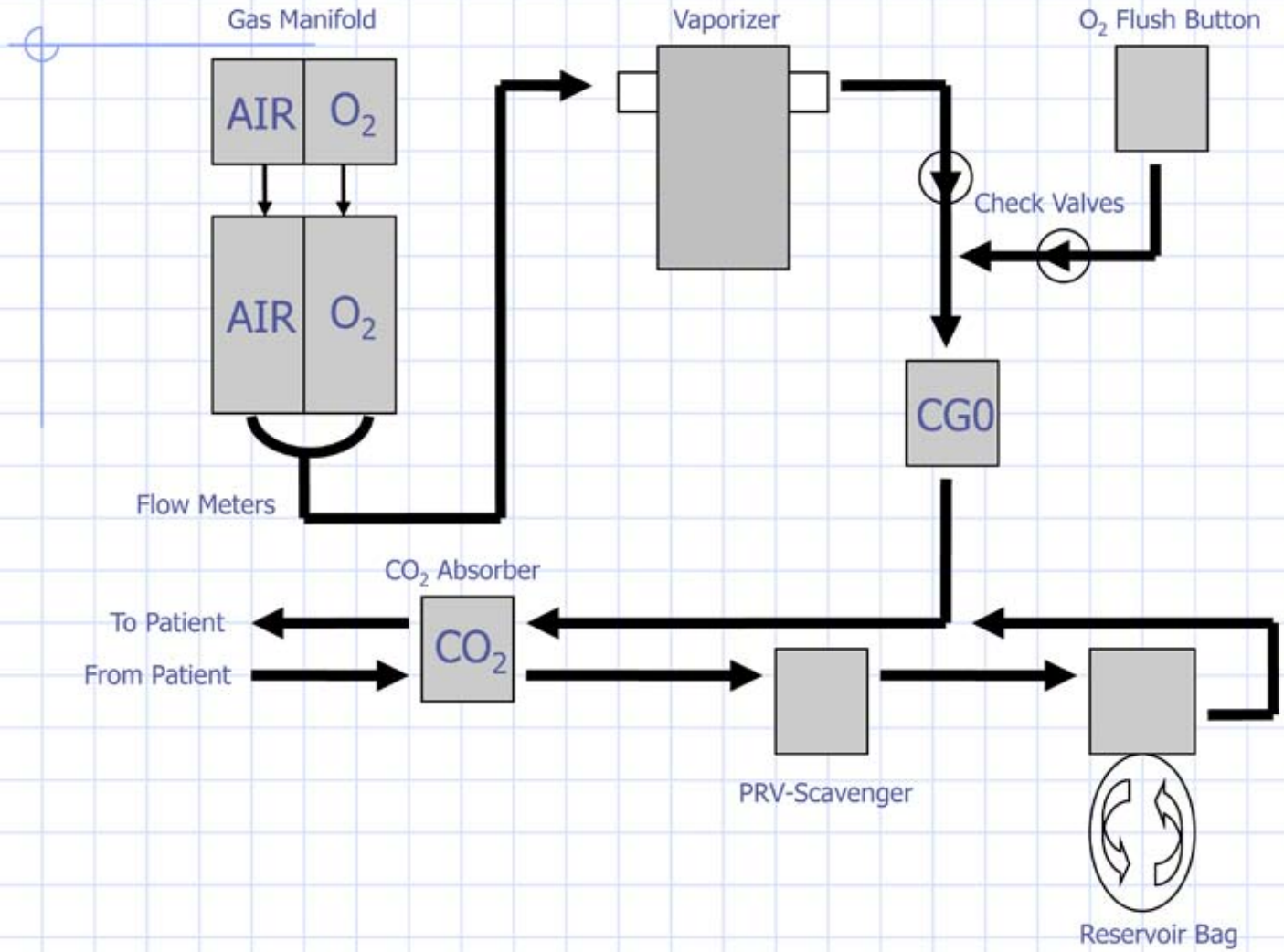
GAS FLOW DIAGRAM II

Air Flow from Gas Manifold to "L" Frame



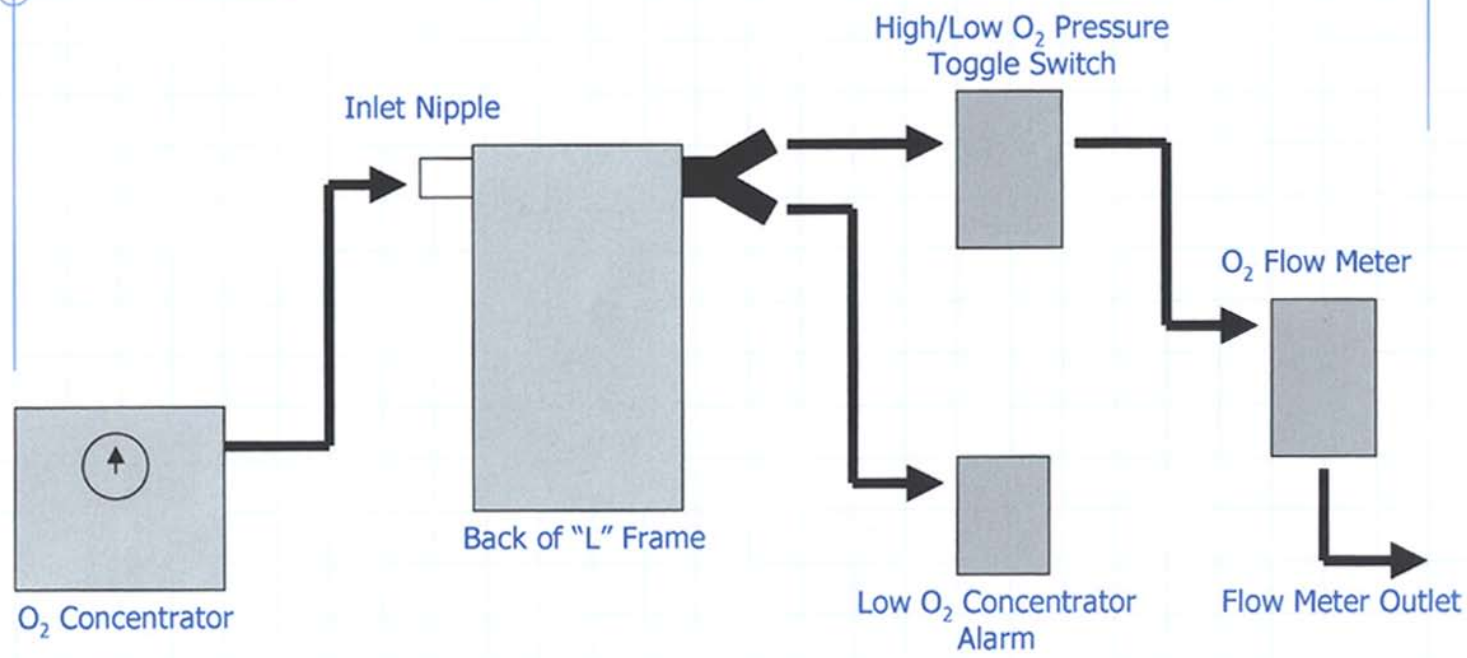
GAS FLOW DIAGRAM III

Air/O_2 From Flow Meters to Common Gas Outlet (CG0)

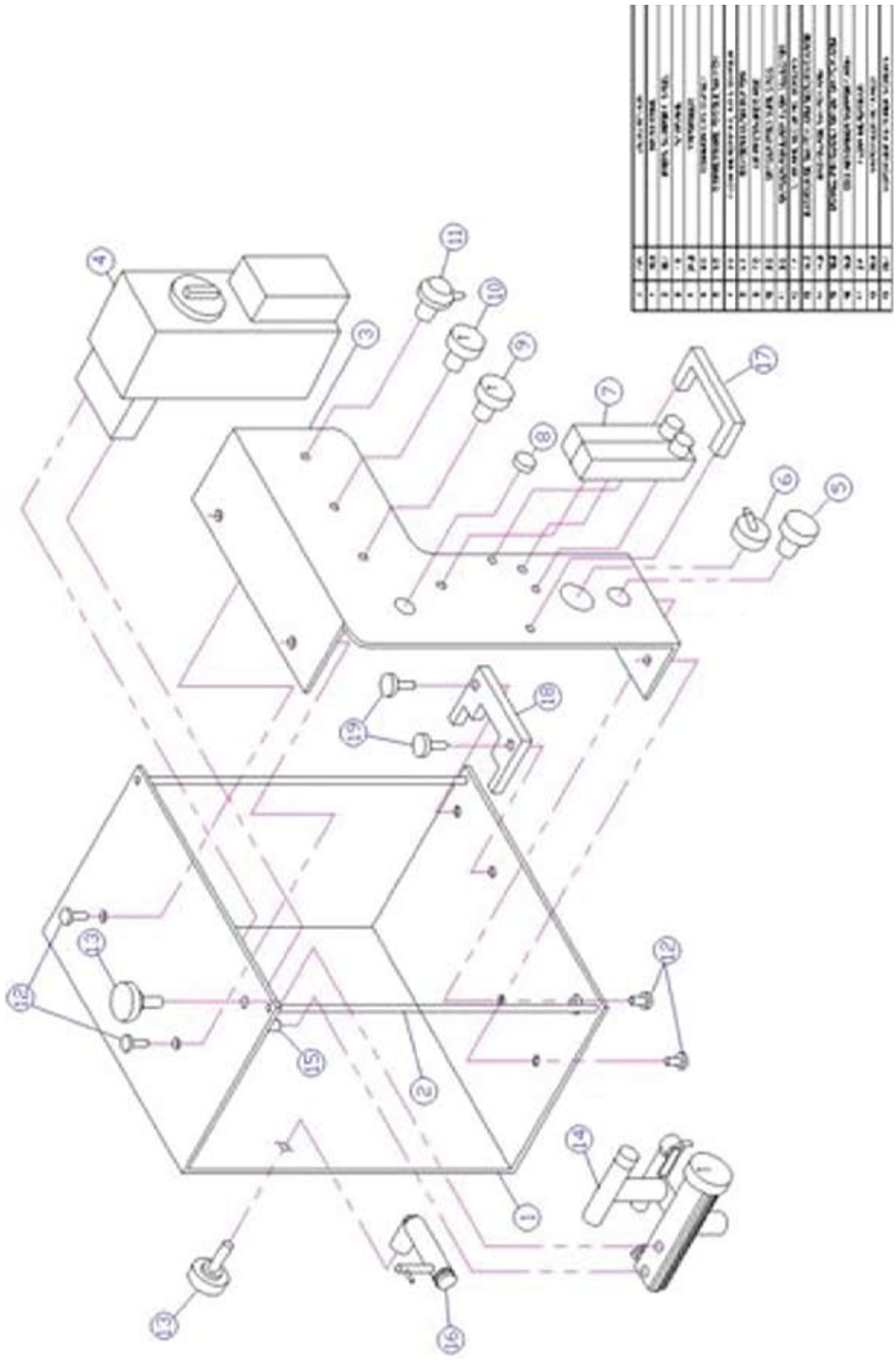


GAS FLOW DIAGRAM V

Gas Flow From O_2 Concentrator to O_2 Flow Meter

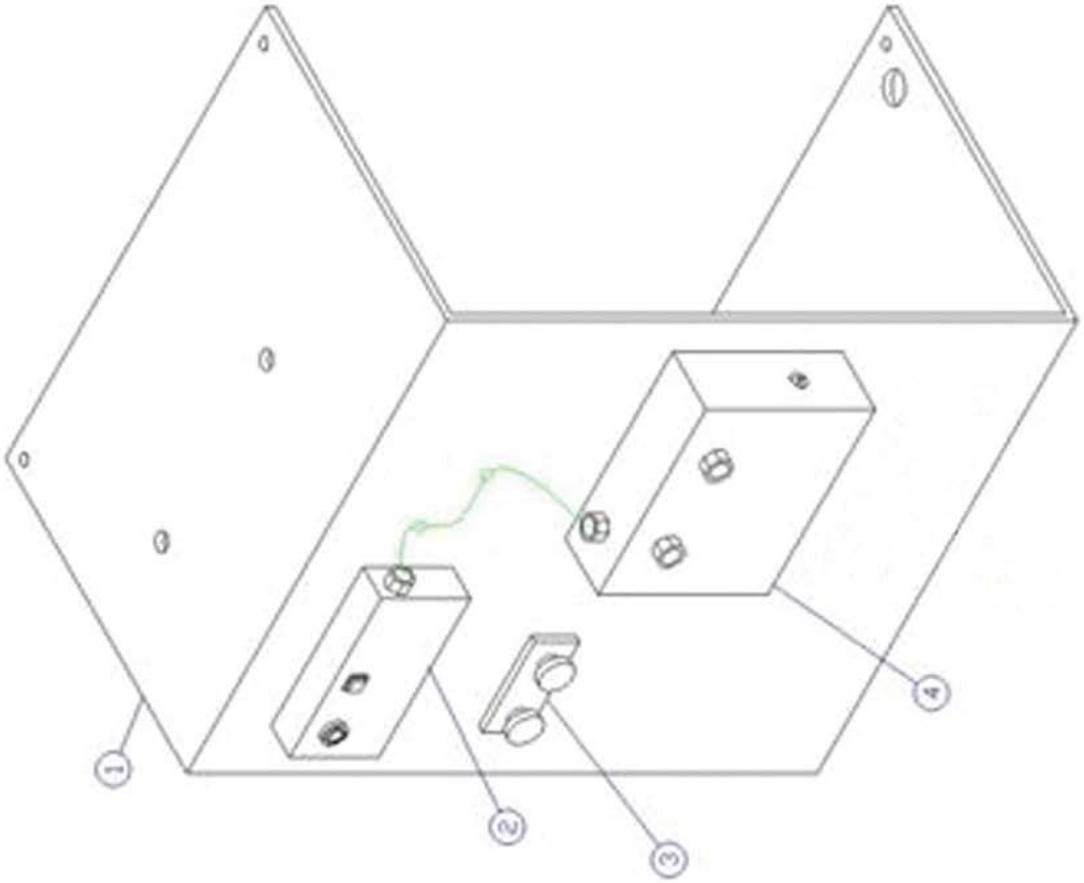


EXPLODED VIEW – FRONT



EXPLODED VIEW – BACK

#	P/N	DESCRIPTION
1	100	MAIN BODY FRAME
2	190	MAIN ARM ASSEMBLY WITH ALARM
3	246	VERTICAL HOLDING SPACER & SECURING KNOBS
4	130	GAS MANIFOLD, MANIFOLD COVER



Magellan 2200 Model-3
Anesthesia Service Manual

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PURPOSE OF DOCUMENT

This Service Manual provides the reader with important information concerning the general service, maintenance and general repair of the Magellan-2200, Model 1 Anesthesia Machine.

This manual will allow for the service of the Magellan-2200, Model 1Anesthesia Machine and its accessories. This machine may be fully serviced outside of the factory and the reader may contact the factory at any time for assistance.

GENERAL POLICY STATEMENT

The scope of this manual covers general maintenance, calibration of controls, disinfecting procedures and replacement of certain components at the intervals indicated within this document..

EQUIPMENT NEEDED FOR BENCH TESTING

1. **Operators Manual**
2. **Pre-Use Check List:** Contained in this manual, the Operators Manual and Separate Laminated Card
3. **Regulated, Pressurized Gas Sources:** Wall outlets for oxygen and air, gas cylinders for oxygen and air, each with appropriate pressure-reducing regulators, portable medical grade air compressor and oxygen concentrator.
4. **Mechanical or Electrical-Mechanical Test Lung:** The factory utilizes the Bio-Med VT-2A Test Lung, however, other brands of such devices may be used for bench testing.
5. **Hand-Operated Spirometer:** May be used for gas volume calibration if other mechanical test lungs are not available.

6. Rubber Test Lung or Any One Liter Rubber Test Lung or One Liter Gas Reservoir Bag: Used to simulate patient delivered gas volumes if mechanical Test Lung is not available.

7. Carbon Dioxide Absorber: King Systems KAB-9 unit, either full of absorbent or empty.

8. Patient Tubing Circuit: Any approved Patient Tubing Circuit for Anesthesia may be utilized.

9. Monitoring Device for Anesthetic Agent: Either a specific vaporized agent testing device such as a Bickford Anesthesia Agent Tester, Model-3, or an anesthesia monitor capable of measuring vaporized agent may be used.

10. Tools: The Magellan-2200, Model 3 Anesthesia Machine was designed to be serviced with the following common tools:

A. 1/16-inch Allen's Wrench-used with O_2 flowmeter control knob and the three ventilator control knobs.

B. Screwdriver, regular slotted head.

C. Small, adjustable crescent wrench, or:
1. 1/2-inch open head wrench
2. 7/16-inch open head wrench
3. regular pliers

D. 1-inch sealing tape roll

E. Tube of Krytox (or other oxygen compliant) lubricant

F. Water-based leak testing solution

ANNUAL MAINTENANCE, PARTS NEEDED AND TESTING

Recommended Inspection/Replacement of Certain Components

A. Annually: The following procedures should be used to ensure proper operation of the machine, at least once per year or at any other interval that the Biomedical Technician deems necessary.

B. Parts Needed: The following parts will be needed for Annual Service

• Inlet Filters (2 each) P/N **11.3**

1. Changing the Gas Manifold Inlet Filters:

Air (DISS) Inlet Connector:

A. Using a crescent wrench, unscrew the DISS Air inlet connector and remove.

B. Remove the filter spacer (aluminum ring) then remove the cone-shaped filter.

C. Inspect the filter for debris. If debris is found, remove it.

D. Install the filter back into the Gas Manifold (with original or new filter) with the small end first.

E. Install the filter spacer (aluminum ring).

F. Pull open the one-way valve (located on the end of the threaded portion of the DISS adapter), and apply some Krytox (or, equivalent) lubricant.

G. Re-tape the DISS Air connector, threaded portion, with sealant tape.

H. Re-install the DISS Air connector, screwing it closed, snugly, with the crescent wrench.

Oxygen (DISS) Inlet Connectors:
(the first one is located next to the Air Connector, the second one is located on the left-hand side of the Gas Manifold and the procedure is identical for both Oxygen DISS Inlet connectors.)

A. Using a crescent wrench, unscrew the DISS Oxygen.

B. Remove the filter spacer (aluminum ring) then remove the cone-shaped filter.

C. Inspect the filter for debris. If debris is found, remove it.

D. Install the filter back into the Gas Manifold (with original or new filter).

E. Install the filter spacer (aluminum ring).

F. Pull open the one way valve (located on the end of the threaded portion of the DISS adapter) and apply some Krytox (or, equivalent) lubricant.

G. Re-tape the DISS Oxygen connector, threaded portion, with sealant tape.

H. Re-install the DISS Oxygen Connector(s), screwing it closed, snugly, with the crescent wrench.

2. Mandatory Replacement of Gas Manifold - High Pressure Color-Coded Tubing

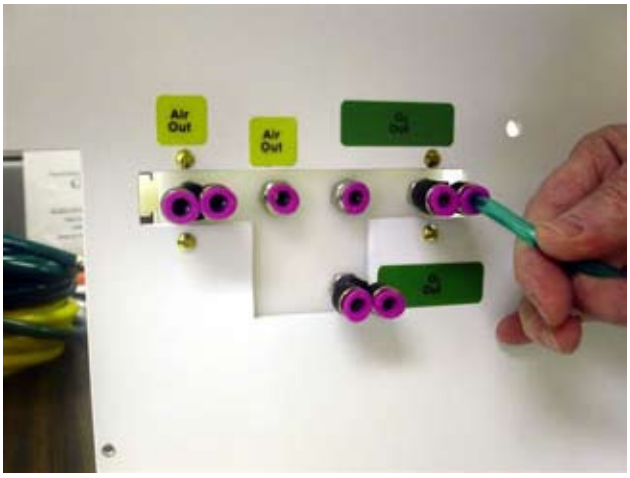
Every five years or, at any necessary time, each of the 10 color-coded tubes that attaches to/from the Gas Manifold should be replaced using the following procedure:

NOTE: The end of the color-coded tubing must be squarely cut; angled ends may not seat properly.

A. Green (oxygen) and Yellow (Air) Tubing: The connectors from the Gas Manifold to each of the following components are of the "push-to-insert-and-lock" type.

B. To dismount, push in on the outer ring and pull the tubing out.

C. To re-insert, push the end of the green tubing into the receptacle and then use a "pulling" action to lock the tube in place.



Green Tubing Positions From Gas Manifold to:

A. Auxiliary O_2 Flow Selector

B. O_2 Pressure Gauge

C. O_2 Flush Valve

D. O_2 Flowmeter

E. O_2 Position on Ventilator Gas Selector Toggle Switch

F. O_2 Concentrator/High Pressure O_2 Selector Toggle Switch

G. O_2 Low Pressure Alarm

H. O_2 Very Low Pressure / O_2 Concentrator Pressure Alarm

Yellow Tubing Positions From Gas Manifold to:

A. Air Pressure Gauge

B. Air Position on the Ventilator Gas Selector Toggle Switch

C. Air Flowmeter

II. ROUTINE FUNCTIONAL TEST : The functional test may be done at annual intervals or at any time that internal components have been replaced.

NOTE: The Routine and Annual Functional Test may be carried out at any interval. This test will indicate any malfunction of the machine or its components and the Operator or Biomedical Technician will be able to rectify any component that is not functioning properly.

Test Procedure:

1. Assemble and install all components needed for routine clinical use of the machine as outlined in the Operators Manual, or the Laminated Set-Up Card.
2. Perform the Pre-Use Checklist and Laminated Set-Up Card (with photos) in sequence. This Checklist is contained in the Operators Manual; the separate Pre-Use Checklist laminated card and Set-Up Card are provided with each machine.

NOTE: If the machine passes the Pre-Use Checklist with zero problems, proceed to the Calibration Guide in the next section.

CAUTION: If the machine does not pass the Pre-Use Checklist, correct the problem(s) encountered, then proceed with the Calibration Guide. The Problem Solving Guide on **page 13** of this Manual will assist the Operator in resolving possible common problem situations.

NOTE: If the machine passes the Pre-Use Checklist with zero problems, proceed to the Calibration Guide in the next section.

CAUTION: If the machine does not pass the Pre-Use Checklist, correct the problem(s) encountered, then proceed with the Calibration Guide. The Problem Solving Guide on page 13 can assist the Operator in resolving possible common problems.

CLEANING AND DISINFECTION

Cleaning
The Magellan-2200, Model 3 may have the exterior of the device and its external components, cleaned with a mild solution of soap and water, then thoroughly dried off.

Disinfection
The Magellan-2200 may have the entire exterior of the device and its exterior components, disinfected with a mild, hospital grade disinfectant solution such as *CaviCide*. Follow the disinfectant manufacturers directions for use.

Steam Sterilization
The following components may be autoclaved at a temperature of 121 degrees C for 15 minutes:

1. Tubing and connectors from the common gas outlet to the absorber inlet port.
2. Tubing and connectors from the air and oxygen flowmeters to the vaporizer port.
3. Tubing and connectors from the outlet port of the vaporizer to the common gas outlet.
4. Tubing and connector for the scavenger system.
5. Oxygen sensor "tee" mount.
6. Bag/Vent switch assembly and support arm.

Vaporizer

1. The process of filling and emptying the vaporizer with agent will clean the internal passageways of the vaporizer filler block satisfactorily.
2. The exterior of the vaporizer should be kept clean and dust free with a dry cloth, or, if necessary, use proprietary cold sterilized wipes or cloths and dry thoroughly.

CO2 Absorber Canister (refillable version)

1. The King Systems KAB-9 refillable absorber may be autoclaved 40 times then should be replaced.

MINOR MAINTENANCE RECOMMENDATIONS

Purpose
To ensure the Magellan-2200, Model 3 Anesthesia Machine is in proper operating condition.

Scope of Recommendation
These recommendations are for routine maintenance. Annual or other maintenance procedures are contained in the Magellan-2200, Model 3 Service Manual.

Recommendations

1. Perform a Pre-Use Check according to the Pre-Use Checklist.
2. Check all monitoring devices according to the manufacturers recommendations.
3. Ensure that the Oxygen sensor can be calibrated properly. If the sensor does not calibrate, replace.

Tools Needed for All Maintenance

1. 1-16-inch Allen Wrench
2. Screwdriver, regular head
3. Small, adjustable wrench

GENERAL WARNINGS

1. Patients requiring life-support equipment should be under constant surveillance of competent medical practitioners. There is always the possibility of machine and alarm failure and some malfunctions require immediate, corrective action.
2. Vaporizer-Tilting the vaporizer past 45 degrees with liquid agent in the chamber can result in patient injury or death. If tilted past 45 degrees, empty the chamber, fully open the percent control, then flush the vaporizer with Oxygen from the Oxygen flow-meter set to 5 lpm for 10 minutes.

WARRANTY

The products of Oceanic Medical Products, Inc. (OMPI herein) are warranted to be free from defects in materials and workmanship and to meet the published specifications for a period of five (5) years from date of delivery to the original customer.

The liability of OMPI under this warranty is limited to replacing, repairing or issuing credit, at the discretion of OMPI, for the parts that become defective or fail to meet published specifications during the warrant period; OMPI will not be liable under this warranty unless (a) OMPI is promptly notified in writing by Buyer upon discovery of defects or failure to meet specifications; (b) the defective unit or part is returned to OMPI, with transportation charges prepaid by Buyer; (c) the defective unit or part is received by OMPI for adjustment no later than four weeks following the last day of the warranty period; and (d) OMPI examination of such unit or part shall disclose, to its satisfaction, that such defects or failures have not been caused by misuse, neglect, improper installation, unauthorized repair or alteration, or accident.

Any authorization by OMPI for repair or alteration by the buyer must be in writing to prevent voiding warranty. In no event shall OMPI be liable to buyer for loss of profits, loss of use, consequential damage or damages of any kind based upon a claim for breach of warranty, other than the purchase price of any defective product covered hereunder. OMPI warranties hereinabove set forth shall not be enlarged, diminished or affected by, and no obligation or liability shall arise or grow out of, the rendering of technical advice or service by OMPI or its agents in connection with Buyers order of the products furnished hereunder.

LIMITATIONS OF LIABILITIES

This warranty does not cover normal maintenance such as cleaning, adjustment or lubrication and updating of equipment or parts. This warranty shall be void and shall not apply if the equipment is used with accessories or parts not manufactured by OMPI or authorized for use in writing by OMPI, or if the equipment is not maintained in accordance with a prescribed schedue of maintenance. The warranty stated above shall extend for a period of five years from date of delivery, effective November 15, 2000. Te foregoing is in lieu of any other warranty, expressed or implied, including, without limitation, warranty of merchantability, except as to title, and can be amended only in writing by a duly authorized representative of OMPI.

Returned Goods Policy
All returns must be authorized by OMPI prior to shipping. Returned goods are subject to a 20 percent restocking fee. Contact OMPI Customer Service with your request for an authorization number.of the products furnished hereunder.

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